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Credits

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Editors: Karen Owens, RMDAC
and Richard Chesley, DHEC
Design: Gregg Glymph, DHEC

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Introduction

In the past, many companies did not think about the solid waste they generated ... out of sight, out of mind. They simply had systems in place to haul the waste away. When you consider that about 40 percent of the waste generated in South Carolina comes from business and industry, it is apparent that changing business leaders' minds about how they deal with waste is an important task, especially given the fact that we're generating more garbage. Add to that the growing amount of waste being shipped into South Carolina as well as a decreasing number of landfills due to more stringent regulations and the public's growing resistance to siting new landfills in their communities, better waste management becomes even more important.

Waste management makes good business sense. With a little planning and work, companies can reduce the amount of waste they generate as well as streamline operations to improve efficiency and productivity. They also demonstrate a concern for the environment and may be able to improve their bottom line.

Undertaking a recycling program, both on-site and off-site, can reduce regulatory exposure and in some cases may eliminate the need for permits, manifests, monitoring and reporting. In addition, these programs may reduce the potential long-term liability associated with waste disposal.

The Business Recycling Assistance Program (B-RAP) was established to provide business and industry in South Carolina with free technical assistance to foster waste reduction, recycling, recycling market development, buying recycled and pollution prevention programs.

B-RAP is a partnership of the S.C. Department of Health and Environmental Control's (DHEC) Center for Waste Minimization (CWM), Office of Solid Waste

Reduction and Recycling (Office) and the Small Business Assistance Program (SBAP) along with the Recycling Market Development Advisory Council (RMDAC), which is managed within the S.C. Department of Commerce.

B-RAP is non-regulatory and on-site visits are confidential. Our technical assistance includes:

- Assessing waste reduction and recycling opportunities;
- Providing research and assistance in developing markets for recyclable materials in South Carolina;
- Identifying effective recovered materials as substitutes for raw materials as part of the manufacturing process;
- Offering updates on recycling legislation and incentives;
- Promoting the availability of products made from recycled content;
- Providing training and educational seminars for employees; and
- Supplying education and technical assistance materials and other related publications.

In summary, reducing the amount of waste generated by your business, whether large or small, can not only protect the environment, but also improve your bottom line.

This guidebook provides a model for businesses to help incorporate waste reduction and pollution prevention initiatives as part of their everyday business plan as well as their long-term business strategies.



Business **RECYCLING** Assistance Program

1-800-768-7348

www.scdhec.net/brap

What is Waste Management?

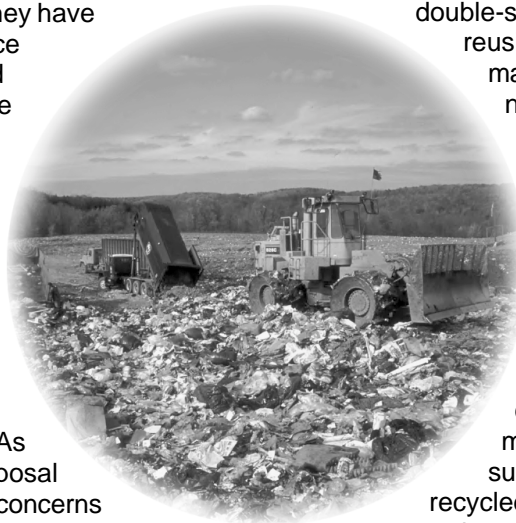
In recent years, many companies have adopted a “hierarchy of integrated waste management principles.” In simplest terms, they have learned the need to prevent or reduce waste, reuse materials, recycle and compost when possible and dispose the remaining waste, either at a local landfill or incinerator. In addition, waste management incorporates the purchasing and manufacturing of products that contain recycled content or produce less waste.

The adoption of integrated waste management by businesses is the result of several economic factors. As landfill space decreases, waste disposal expenses increase. Environmental concerns and the complexity of moving certain types of waste also can affect disposal costs. In addition, savvy consumers are considering environmental impacts when purchasing products and dealing with businesses. And with uncertain economic times, the need to manage money more efficiently has made many companies look at how they manage their waste.

When we discuss waste reduction in this guidebook, we mean activities that reduce the overall amount and/or

toxicity of waste needing disposal. Avoiding waste whenever possible might be as simple as making double-sided copies or as complex as reusing by-products as part of a firm’s manufacturing process. Companies need to examine the types of waste being generated, see if there are opportunities to reduce or prevent waste and reuse material whenever possible. If there are materials that can be collected for recycling, programs can be established and outlets can be found so these items can be converted into new products. Then completing the process, businesses must adopt strategies to buy supplies and products made from recycled materials to sustain markets and ensure that recycling programs can succeed.

Several companies in South Carolina have adopted impressive zero waste goals and a few are well on their way to achieving this goal. Many businesses, however, simply consider our state’s low landfill disposal fees and do not see the urgency of adopting new waste management behaviors. B-RAP’s goal is to change those perceptions and foster increased participation in waste diversion and recycling activities.



Milliken adopts zero waste goal

Headquartered in Spartanburg, Milliken & Company is an international producer of textile and chemical products. Thanks to the vision and leadership of its chief executive officer Roger Milliken and his committed Milliken associates, this company has served as a leader for other South Carolina businesses on how to conserve natural resources and protect the environment.

Milliken adopted its comprehensive environmental policy in 1990 and set a goal of zero waste generation. Recycling plays a major role in Milliken’s business culture and has helped them reduce waste that was once thrown away. In fact, Milliken recycles 100 percent of its office paper as well as all of its cardboard tubes, cones and containers.

Partnerships with Shred First and Sonoco Products are credited for making paper and cardboard recycling successful. Shred First, a document and plastics recycler, provides dependable collection of paper and has customized Milliken’s program to ensure its cost-effectiveness. Sonoco provides a minimal lease charge for cardboard balers and receives high-quality materials for its recycled production. By working with these two companies, Milliken’s paper-based recycling has grown by more 2,600 tons annually.

Milliken has received numerous local, state and national awards for its environmental stewardship, including most recently the 2001 Best Paper Recycling Award from the American Forest & Paper Association and the Responsible Care Leadership Award from the American Chemistry Council in 2001.

Getting Started...

In order to be successful, waste reduction programs must be planned carefully to meet a business' particular needs. There is no "one-size-fits-all" approach to waste management so make sure to do your homework before getting started. Here are some suggestions for starting a waste reduction and recycling program:

- Get support from top management with involvement from every employee;
- Organize a waste reduction task force and appoint a waste reduction and recycling coordinator;
- Establish a policy statement for your company; and
- Communicate, educate and motivate your employees.

Management Support/ Employee Involvement

A waste management program cannot be successful without top management's support and voice. Employees must feel that it is part of the "corporate culture" before they will change their behavior so endorsements from management are critical as program goals are announced and collections are implemented. It also is important to communicate with employees the benefits of adopting waste management programs, which may include lower disposal costs, potential energy savings, improved efficiency and enhanced company image, to name a few.

Start with some simple waste reduction and recycling activities that will show results quickly and help establish your program. Be sure to communicate these early successes and compliment employees on the

efforts to build a solid foundation for your waste reduction program.

Once you have gained support from management, it is critical to get representatives from all areas of the business to share their ideas and opinions about how to reduce waste. After all, they are the ones who know their job the best and can give the most reliable information about the materials they use.

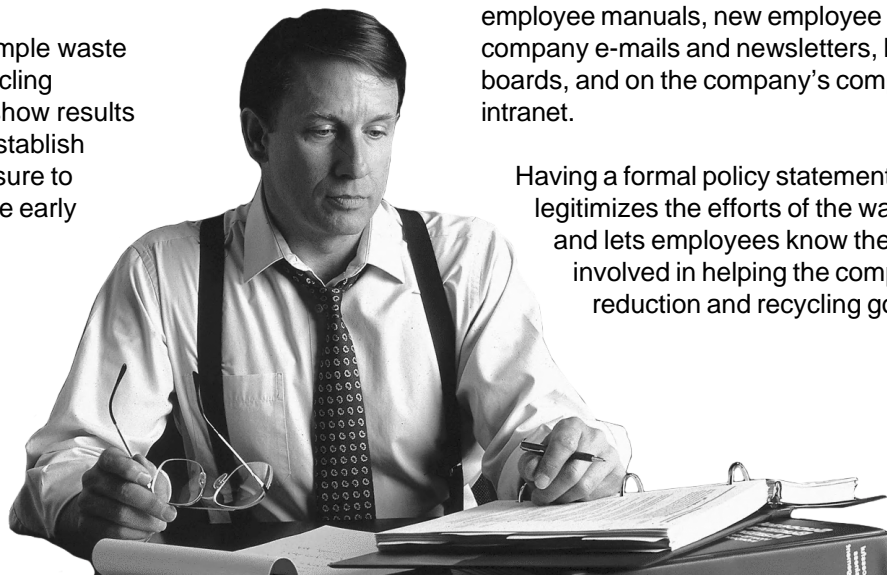
Task Force on Waste Reduction

This team, made up of volunteers from each department, is responsible for planning, implementing and maintaining the waste reduction program. It is important to get their input before putting a plan together. The team members also serve as ambassadors for your program in their respective departments, providing a structure for communicating the program's goals and objectives to their peers. The team approach also provides an opportunity to build camaraderie among departments as well as spreads the work load among more people. The waste reduction and recycling coordinator should be selected to lead this group and serve as the liaison between top management and employees.

Establish a policy statement.

The waste reduction task force should develop a policy statement to be adopted by top management. This statement should be circulated throughout the company through a variety of methods including employee manuals, new employee orientations, company e-mails and newsletters, bulletin or message boards, and on the company's computer network or intranet.

Having a formal policy statement in place further legitimizes the efforts of the waste reduction team and lets employees know they need be actively involved in helping the company reach its stated reduction and recycling goals.



Milliken & Company's Environmental Policy

Milliken & Company is committed to operating our plants and facilities in complete compliance with all applicable environmental regulations and to operate in a manner that protects the quality of our environment and the health and safety of our associates and the public.

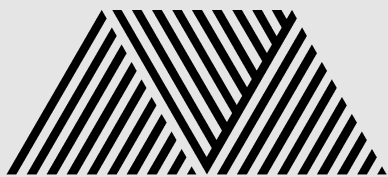
We are committed to strive for a goal of zero waste generation to all media – land, air, water – to be achieved by continual improvement in all our operations. This goal will guide the conduct of our manufacturing operations, the development of new products and our interaction with suppliers and customers. Recycling of materials is an integral part of this on-going effort.

We are committed to encouraging our families, our associates and our communities, through education and leadership, to conserve our natural resources and protect the environment in our daily lives.

We reaffirm our commitment to work with local, state and federal authorities to develop effective environmental solutions that meet tests of practicality and feasibility.

Roger Milliken,
Chairman and Chief Executive Officer
November 14, 1990

*From Milliken & Company's Web site,
www.milliken.com/environment/policy.html*



MILLIKEN

Communicate, Educate and Motivate

Regular communication with employees about the implementation and progress of the waste reduction program is critical to its success. Frequent reminders help keep the issues of waste reduction and recycling in employees' ongoing consciousness and improve chances for changing their disposal behaviors. Be sure to post signage in work areas as well as break rooms and other areas where employees congregate.

Use company communication tools, whether it is a company newsletter or a computer network site, to reinforce messages on what is working well with your program, what areas could use some improvement and how to make those changes. And be sure to include success stories and cost savings information whenever the opportunity arises.

Education is an ongoing process and companies must remain committed to getting the word out about how important efficient waste management is to the overall company bottom line.

An Example of a Waste Reduction Team

Located in Berkeley County, Alcoa-Mt. Holly is a primary smelter which produces more than 200,000 metric tons of aluminum per year and employs more than 600 people. The facility received ISO 14001 certification in 1996 and has been recognized in South Carolina for its outstanding environmental stewardship efforts.

The formation of Alcoa-Mt. Holly's Pollution Prevention (P2) Team has been essential to the development of waste minimization practices and to the improvement of the company's recycling program.

The P2 Team was chartered as a standing team made up of representatives from all departments and works to drive improvements in environmental performance plant-wide. Achievement awards are given to employees who contribute waste minimization or pollution prevention ideas that are implemented and yearly goals are set concerning waste minimization, recycling and promotion of environmental awareness both within the facility and the community.

Meeting monthly to discuss environmental issues and exchange ideas on further improvement of waste minimization practices and recycling, the P2 Team has become an avenue on which ideas concerning environmental issues can travel between all areas of production and administration.

Sorting Your Waste

Once your company has a team and policy in place, you will need to assess your current waste disposal operations and begin identifying what can be reduced, reused and recycled. Use the Current Waste Operations work sheet (page 8) to get a basic understanding of how your company is managing its waste. You will need to look at your current hauler's records for what and how much he has been removing from your facility as well as determine how much it is costing your business.

You may want to review your company's purchasing records to gain perspective on the flow of materials at your facility. This helps the team determine what is brought into the business and leaves only as trash, not product. Examples may include packaging materials (cardboard boxes, pallets, shrink wrap, etc.), food service items (paper or styrofoam plates/cups) and computer paper.

If you are a manufacturing business, check production records to see if there are opportunities to reduce waste by avoiding overruns or cutting down on errors. Production records also can show how much scrap waste may be associated with varying levels of production. For example, if one pound of scrap is created for every widget produced, you can project scrap amounts for various production times (weekly, monthly or annually).

Next, designate an audit team to physically inspect the waste created on a given day. Since this exercise will require the team to physically sort through your trash, puncture-resistant gloves and old clothes are necessary. To conduct the inspection, spread a large plastic sheet and dump the day's waste onto it. Use a scale, if possible, to weigh materials and estimate the percentage of each category in the waste stream. If you produce a large amount of waste on a daily basis, use a representative sample of your trash containers.



Using the Identifying Waste work sheet (page 9), check off each type of material generated. Then estimate what percentage of each material comprises your daily waste stream. You may need to add other materials at the end of the list that are not already categorized.

Conducting a waste audit may not seem all that important at first. Some might even think just looking into the trash dumpster should suffice. But it really is an effective way to gain a better understanding of what your employees are discarding and determine what waste can be effectively reduced by implementing a reduction, reuse and recycling program.

ENERGY TIP: Save energy – turn off lights, computers, printers and monitors when leaving the office.

Exercise 1: Current Waste Operations

Name of hauler: _____

List all collection points inside and outside the company: _____

Amount currently collected by weight: _____

Volume: _____

Frequency of collection: _____

Average bill: _____

Billing frequency: _____

Bills based on weight of volume? _____

Where is waste finally disposed (which landfill)? _____

List current recycling efforts: _____

Materials collected: _____

How are they collected? _____

Amounts of each material collected by weight: _____

Percentage of overall waste currently recycled: _____

Recycling revenue: _____

Recycling costs: _____

Avoided disposal costs (i.e. savings accrued by not paying for material to be hauled to landfill): _____

Exercise 2: Identifying Waste

	CHECK OFF IF IN WASTE STREAM	ESTIMATE PERCENTAGE IN WASTE STREAM
Green bar computer paper		
White ledger		
White form feed paper		
White copy paper		
White letterhead		
White ledger pads		
Cash register receipts		
Adding machine tape		
Envelopes		
Colored paper		
Yellow legal pads		
Letterhead		
Message pads		
Spread sheets		
Newsprint		
Corrugated cardboard		
Mixed waste paper		
Unsolicited mail		
Coated stock		
Windowed envelopes		
Stick-on notes		
Boxboard		
Non-recyclable paper		
Paper plates/cups		
Napkins/towels		
Tissue		
Wax-coated		
Plastic coated		
Carbon paper		
Plastics		
#1 PET bottles		
#2 HDPE bottles		
#2 HDPE film		
#4 LDPE film		
#3 Vinyl bottles, pipe, siding		
#5 Polypropylene		
#6 Polystyrene foam		
#6 Rigid polystyrene		
Other plastics:		

Continued on the following page

Exercise 2: Identifying Waste (continued)

	CHECK OFF IF IN WASTE STREAM	ESTIMATE PERCENTAGE IN WASTE STREAM
Aluminum		
Cans		
Foil		
Other (rain gutters, etc.)		
Steel Cans		
Other ferrous metals (strapping, etc.):		
Glass		
Brown		
Clear		
Green		
Yard Waste		
Grass clippings		
Leaves and brush		
Other materials:		

See **Appendix I** for background information on recycling the materials that are listed above.

Waste Audit Follow-Up

Now that the waste reduction team has a better understanding of what waste your company is generating, they are better equipped to determine what steps to take to reduce, reuse and recycle. Here is an easy six-step approach to follow:

1. Get the Facts

Use the results of your waste audit team to determine what waste can be prevented, what can be reused or recycled, and what waste still may need to be disposed.

2. Involve Staff

Getting management buy-in and setting up a waste reduction team are major steps to implementing a successful program. Still, you need to encourage all employees to participate to get the best results. Ask employees for their ideas about ways to reduce waste. Provide suggestion boxes or use occasional department meetings to brainstorm about waste prevention and recycling opportunities.

Once your plan is in place, all employees and managers must be trained in reduction and recycling processes. Keep them informed and involved at all steps in the development and implementation of a program. Employees can be a valuable resource in identifying ways to improve the program.

3. Plan Thoroughly

Begin by prioritizing the elements of the waste stream for action. Ideally, every element will be targeted for reduction/recycling but, in the beginning, it is best to concentrate on the materials that make up the greatest portion of your waste stream.

When targeting a type of material, consider:

1. How much is generated?
2. Can the waste be reduced or recycled?
3. Are there regulations or state laws (i.e. impending landfill bans, recycling mandates) that we need to consider?



4. What are the economic factors at play? Are there cost savings from reducing your trash? Are you generating revenue by recycling? Are markets available for your materials?

4. Focus on Results

It is important to establish a record-keeping system to track the effectiveness of the program. Track the expenses and savings from reduction and recycling. For instance, you may experience savings in waste collection fees because you have diverted 20 percent of your materials for recycling, but labor costs for collecting, preparing and storing the recyclables may increase your operation expenses. By recording these measures you can see if the program is economically beneficial.

However, it is important to point out that companies are not going to make huge profits based on recycling programs. Sometimes you make money on recycling and other times just break even. Remember that typically waste management costs are rising, and an investment now by your business to reduce waste is likely to reap benefits and savings in the future.

The auditing team should continue tracking waste and identifying further opportunities for reduction/recycling. Ultimately, the success of your program should be measured by the amount and quality of waste diverted from disposal. It is important to establish a baseline measurement of waste

destined for disposal, and then regularly determine your success in reducing and/or recycling waste.

See **Appendix II** for an example of the recording system developed by Alcoa-Mt. Holly plant in Goose Creek, S.C.

5. Costs

Analyzing savings in waste disposal costs is another way to quantify your program results.

To find total disposal costs:

1. Add together janitorial services, garbage bills and confidential destruction costs.
2. Subtract revenue from current recycling programs.
3. This equals your total disposal cost.

If you lease your place of business and garbage disposal is part of the monthly rent, you might want to see if the landlord will offer your business a discount if disposal expenses are reduced through your source reduction and recycling efforts.

6. Positive Reinforcement

Positive reinforcement of your program's success and employees' dedication are key components for success. Developing a sense of ownership and pride in the efforts will encourage many to continue reducing waste and recycling. You also may want to consider some other incentives to keep employees motivated, such as lunch with the boss, a special parking place, recognition in employee communications, or even a thank you letter posted on your employee bulletin board or better yet, an e-mail thank-you note. Be as creative as you can and your employees will continue to help your bottom line.

Elements of a Waste Reduction/Recycling Program

- Upper management support
- Organize an audit task force
- Establish a baseline to measure progress
- Set specific goals for volume and weight reduction
- Commit to accurate accounting and reporting
- Program evaluation

B-RAP FACTOID: Recycling saves money and natural resources.

RECYCLING TIP: Save paper – reuse scrap paper and print double-sided copies.

Alcoa-Mt. Holly experiences significant waste reduction

Alcoa-Mt. Holly is another South Carolina manufacturing company committed to reducing its impact on the state's environment through continued stewardship and hard work. Since 1990, its Pollution Prevention Team has worked diligently to eliminate waste and improve recycling at its Goose Creek facility.

In 1998, Alcoa-Mt. Holly generated 150 pounds of total waste per ton of aluminum produced and only 68 pounds of solid waste per ton of aluminum produced. When Alcoa-Mt. Holly's generation of spent pot liner (an aluminum industry specific waste

stream) is factored out, the company recycled nearly 75 percent of the total waste generated in 1998.

Alcoa-Mt. Holly's further demonstrated its commitment to the environment and community with significant reductions in waste landfilled from 1990 to 1999. In 1990, the company landfilled 5,247 tons of waste, but by 1999 was landfilling less than 1,000 tons of waste, resulting in a 10-year cumulative savings of more than \$845,000. Alcoa-Mt. Holly's solid waste disposal costs have steadily declined to current levels despite annual increases in disposal fees and other associated costs.

Source Reduction Considerations

A reduction program can be simple, involving low-cost techniques such as improved inventory control, operations and maintenance. There are many ways to practice source reduction – or prevent waste from the beginning. Below are some easy to implement source reduction strategies that can be adopted as official company policies. Be sure to communicate these policy changes with employees to maximize their effectiveness.

Reduction Strategies

- Store documents on computer disks instead of making hard file copies.
- Route memos instead of making duplicates for each person.
- E-mail correspondence when possible.
- Use double-sided copying.
- Use reverse side of drafts for note paper and incoming faxes.
- Reuse file folders by reversing them or re-labeling them.
- Fax main documents without cover sheets by using sticky notes when possible.
- Use hardwood or plastic pallets versus softwood. Hardwood can be reused five or six times and plastic pallets can be reused hundreds of times. Consider the cost savings of reusing pallets.
- Work with all suppliers to return shipping materials, crates, cartons and other packaging for reuse.
- Return toner cartridges from ink jet and laser printers for refurbishing.
- Shred mixed paper and let the shipping department use it for packing material.



Purchasing

The person responsible for purchasing supplies should be directly involved in the audit process and in developing the overall reduction program. Implementing good operating procedures will lead to waste reduction with little effort. These include material tracking and inventory control, scheduling shipments and efficient material handling and storage. Encourage suppliers to reduce their packaging and to use recycled materials wherever feasible.

Watch out for over-ordering to save on unit cost – it may lead to careless use of supplies. Also, products with a limited shelf life, such as paint, may go bad.

Order one or two copies of magazines and newspapers and encourage employees to share them, or place them in a lounge or employee lunchroom. Donate past issues of magazines to nursing homes, hospitals and schools. A local library or college may accept trade magazines that they may not receive. Old newspapers can be reused by the mail room for packing material. It may be useful to survey employees on newspaper subscriptions.

RECYCLING FACTOID: Recycling reduces greenhouse gas emissions that impair air quality.

Dräxlmaier reduces waste by 75 percent

Dräxlmaier Automotive of America, located in Duncan, is a South Carolina-based supplier for BMW and Mercedes Benz. It has successfully diverted nearly 75 percent of its waste stream by implementing a variety of waste reduction, reuse and recycling initiatives. After conducting a comprehensive waste audit, members of the Waste Minimization Team determined that the plant generated between 37 and 46 tons of waste a month, but 85 to 90 percent of this waste could be recycled or reused.

They set a goal to recycle or reuse 50 percent of their waste, targeting their highest volume materials first and adding other materials as the program progressed. Since the materials varied so greatly, they divided the program into five areas: injection molding; cutting department; warehouse and shipping; leather lamination; and the office.

One example of Dräxlmaier's success in reducing waste in its cutting department includes the recycling of leather scrap from full hides into leather belts, moccasins laces and other apparel. In addition, polyester fleece, vinyl scraps and foam materials also are recycled back into the consumer markets for use in clothing and other fabric items.

As a result of Dräxlmaier's aggressive approach, the company has realized significant savings in disposal costs, passed the initial phase of ISO 14001 certification and received recognition as the Best Industry Recycling Program in 2001 from DHEC's Office of Solid Waste Reduction and Recycling.

Dräxlmaier 

Equipment

Examine the equipment used on a daily basis to determine if excess waste is created.

If your photocopier does not have a double-sided feature, consider upgrading. Many copiers without the feature can make double-sided copies by running the front side and then placing it upside down in the paper tray. It is a little more work, but for large runs it's well worth the effort, saving money on paper supplies and reducing waste.

Employee training is critical. Note areas where large quantities of waste are generated. If the wastebasket near the copier or computer printer fills up often, employees may not understand how the machinery works and are making unnecessary mistakes.

Practice preventive maintenance on all equipment. Regular maintenance will extend the useful life and reduce the amount of materials wasted when the machine is not working properly.

Other Reduction Tips

If you generate a lot of cardboard boxes, consider reusing them for your own shipping needs; giving them to employees, moving companies, or mail distribution businesses; or returning them to the distributor for reuse. Of course, you always could consider recycling cardboard. In many instances, cardboard is currently recycled at a high rate because of its value.

Offer a discount to customers who bring in their own packaging, such as reusing grocery sacks.

Purchase materials in larger sizes and use reusable dispensers that can be refilled. For example, a single 16-ounce can uses 68 grams of metal or 40 percent less than the 95.4 grams used in two eight-ounce cans.

Restaurants and other food service establishments should consider donating leftover food to shelters for the needy. Or they could begin composting food waste.

Self-serve tap dispensers for beverages, rather than single-serve items, eliminate a great deal of material requiring recycling or disposal.

Tips for Recycling

Recycling offers the business community an excellent method of reducing the amount of waste disposed. However, if you choose to start a recycling program, be aware that it is a significant undertaking and may cost a considerable amount of money, particularly in the start-up phase.

The completed waste audit tells you what types of waste are produced and in what quantity (Refer to the Appendix I: Materials Background). Take the information from the waste audit and determine if there are markets for any or all of these materials in your region. You can contact the Business Recycling Assistance Program (call **1-800-768-7348**) or your local recycling coordinator if you need help in identifying markets for material.

The quality and quantity of material produced is very important to the potential recycler, as is your ability to prepare the materials for collection. Before you commit to a recycling program be sure to ask yourself if you are willing to accept the initial and perhaps on-going costs, and if there is a staff person who can oversee the program on a long-term basis.

If you produce materials that are recyclable but do not produce a sufficient quantity, consider working with a neighboring office or business. The local Chamber of Commerce or recycling coordinator may be able to identify other area businesses that are interested in recycling. You also may designate a staff person to take recyclables to a community drop-off center.

When you begin your recycling program, prioritize what items you will start with and build your program from

Elements of a Commercial Recycling Program

- Determine what recyclables are in the waste stream through the waste audit.
- Research markets for those recyclables in the quantities that you generate.
- Determine space, container and equipment needs.
- Contact your hauler and negotiate rates to include recycling.
- Educate and promote.
- Monitor recovery rates, revenues and costs.

there. While it makes sense to recycle your high volume waste first, it may not always be the easiest or most successful material to recycle. For example, cardboard is a good item to include in new recycling programs because several markets exist in S.C. and prices are relatively good for that material. Scrap metal is another good example for much the same reason – it has good economic value and markets are readily available.

Some companies may generate plastic strapping or shrink wrap, but due to its light weight, this material is more difficult to recycle. You have to collect great volumes before you are able to command significant revenue for this portion of your waste stream. That's not to say you shouldn't recycle plastic strapping or wrap – you just may want to consider tackling that material as your recycling efforts mature.

Your team also needs to develop an informal expectation for success. In other words, if you divert 50 percent of your company's waste from disposal, either through reuse or recycling, would you consider your program successful? If your program is new, the answer is **yes**. But if your company has recycled for several years, it may be time to re-evaluate your program and set new, higher goals.

Composting

Another area that has seen increasing interest by businesses recently is composting. There are several alternatives that companies may consider for including it as part of their waste reduction and recycling strategies.

Retail food service companies or businesses that generate food waste through cafeterias or snack rooms may be able to send this material, excluding dairy products and meats, to a municipal or private compost program. Or if there is space available and committed personnel to manage it, an on-site composting program may be warranted.

Composting also can include yard waste collected through on-going landscape maintenance and some sludge materials that result as a by-product of the manufacturing process for some companies. The benefit of composting is a value-added product that can be used for landscape applications at considerable savings as compared to buying retail compost products.

For more information, call DHEC's Office of Solid Waste Reduction and Recycling at **1-800-768-7348**.

Markets for Recyclable Materials

1. Work with local markets, if possible.

Even if the price offered is lower than that of a dealer in the next county, transportation and communication savings may offset the difference. Therefore, it is important to compare net rather than gross selling prices.

Estimate quantities of material to be collected and put out a request for proposals. Then begin the negotiation process. Negotiable items include freight, collection containers, allowable levels of contaminants, method and time for payment, and length of contract. Contracts can protect both buyers and sellers against severe fluctuation by establishing a floor price when the market is down and a discount when the market is up.

When collecting sufficient quantities of material, selling them directly to manufacturers or mills may be possible. Scrap processors and dealers act as a middleman and purchase material from many sources. Many times a higher price can be commanded if recycled materials are sold straight to a mill. However, there is always a risk that the mill will go on strike or perhaps shut down. The size of the program will dictate the marketing of the material.

Talk with several companies before making any commitments. In a multi-material collection program, you may have to work with a number of material buyers.

2. Get the facts.

Make sure you clearly designate in your contract what the responsibilities are for both the vendor and for your company. You need to know up front what the vendor's specifications are. For example, should glass be color separated and crushed? May magazines be mixed with newsprint? Should cardboard be baled? Specifications will determine what type of equipment you may need to purchase, such as balers or shredders.

3. Network.

Talk with surrounding communities to learn about potential markets. Consider cooperative marketing with surrounding areas if your volumes are not high enough to demand competitive prices.

4. Deal with reputable materials users.

Companies with established track records are the safest. If negotiations are being held with a small company, or one that is not well known by recycling professionals, you should carefully check their background and ask for references. Established firms will often provide technical assistance, keep customers apprised of market fluctuations as well as clinical downturns and upswings, and should adjust prices accordingly.

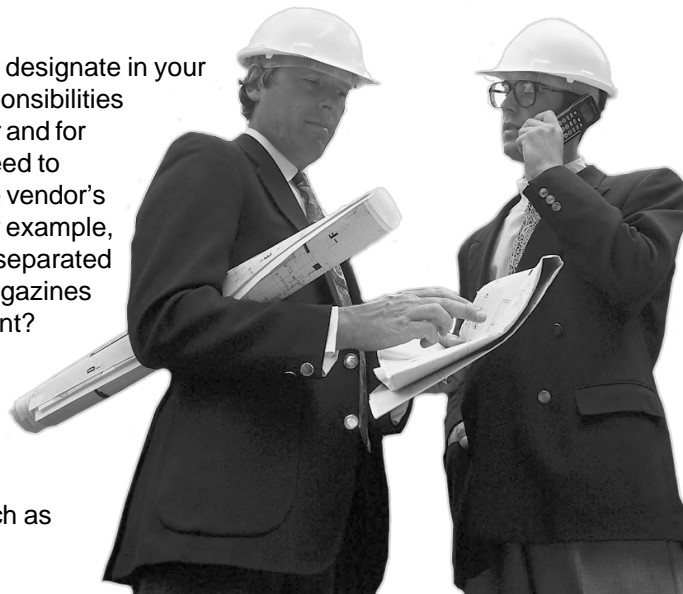
Beware of dealers that do not make regular pick-ups, dispute tonnage or fail to make timely payments. Cash flow is a very important consideration for fledgling operations.

5. Develop long-term relationships with buyers.

For example, it is not advisable to switch to a new waste paper dealer just because they are offering \$1 more a ton than the recycler you have been dealing with for the past several years. If there is a market downturn, the steady buyer will be more inclined to stand by you if you stand by him.

6. Beware of price optimism.

When checking published price lists paid for recyclables, realize that it is not possible to earn that much on a long-term basis. Spot prices do not accurately reflect the prices earned in exchange for a long-term contract. Nevertheless, it is a good idea to regularly monitor market prices to make sure you are getting a fair price.



7. Be flexible.

If the market collapses, look to other management alternatives. For example, if it is impossible to sell newsprint to a paper dealer or mill, perhaps it can be sold for use as animal bedding or cellulose insulation. Your local recycling coordinator may be able to help you find alternative markets.

8. Close the loop.

The best way to sustain and strengthen recycling markets is to purchase products made with recycled material. Collecting materials and then processing it so it can be used in manufacturing another product are the first two components of the recycling loop. Buying the resulting end-products helps signal the first two sectors that recycling is working. Given the economic impact that business and industry can have in purchasing, buying recycled helps keep markets strong.

S.C. WasteXchange

Another means of reducing your waste stream, beyond reduction and recycling, is to participate in a resource exchange with other businesses. The South Carolina WasteXchange is a valuable on-line resource for businesses. This free service offers a clearinghouse of information for companies that have material available as well as those companies who need material. In essence, one company's "waste" becomes another's "resource."



Visit the South Carolina WasteXchange on-line at www.sc.wastexchange.org.

Recycling for Humanity

Recycling for Humanity is a unique, new partnership that will not only give you an opportunity to help Habitat for Humanity but also protect the environment by saving natural resources. The partnership, made up of DHEC's Office of Solid Waste Reduction and Recycling, the S.C. Department of Commerce and the Habitat for Humanity Resale Stores, provides South Carolina businesses and others the chance to reduce excess inventory responsibly, earn tax savings, help their community, reduce waste management costs, conserve natural resources and save landfill space. How? By donating the materials to a resale store.

Habitat for Humanity is a non-profit organization whose volunteers build homes for people in need. About 32 homes per year are built through the current sales from S.C. Habitat for Humanity Resale Stores. The homes are sold to partner families at no profit, financed with affordable, no-interest mortgages. The partner families, who help build the homes, make mortgage payments that are placed in a revolving fund that is used to build more homes.

In South Carolina, Habitat for Humanity has 17 resale stores across the state. The stores accept donations of materials such as furniture, housewares, appliances, computers, carpet and building materials. These items are resold to the public and the funds used to help support the home building program of the local affiliate.

Acceptable donations vary by store. Some stores will accept all donations that are in good working order and can be sold.

S.C. HABITAT FOR HUMANITY RESALE STORES

UPSTATE

Gaffney	864-487-3793
Greenville	864-298-0999
Greenwood	864-953-9880
Landrum	864-457-2666
McCormick	864-465-9094
Seneca	864-888-2118
Spartanburg	864-583-1332

CENTRAL REGION

Aiken	803-642-9295
Columbia	803-252-3570 ext. 105
Sumter	803-934-9749

LOW COUNTRY

Charleston	843-579-0777
Georgetown	843-545-5868
Hartsville	843-307-7629
Johns Island	843-559-4009
Marion	843-423-4663
Myrtle Beach	843-626-5577
Summerville	843-851-1414

Pick-up services are available at most stores.

Buying Recycled Products

In order to establish a good program for buying recycled products, organizations should include the following key elements:

1. Commitment to buy

Organizations must establish a policy to buy recycled products. This commitment is necessary to ensure that manufacturers of recycled content products have markets and that a consistent, long-term demand exists so that they can invest in recycling equipment.



2. Review purchasing specifications

All specifications must be reviewed to eliminate prohibitions or limitations against recycled products. In addition, more subtle obstacles to purchasing recycled products, such as brightness levels for paper, must be identified and revised.

3. Common definitions and percentages

Companies may consider using existing minimum recycled content standards and definitions, such as those established by the U.S. Environmental Protection Agency. There are also numerous Web sites dedicated to promoting recycled content products and many have information on the product performance and prices.

4. Variety of products

Even though paper makes up the largest percentage of the waste stream, buying recycled paper alone will not solve the solid waste problem. There is a wide variety of recycled content products available today, including re-refined motor oil, office supplies and furniture, auto parts, plastic containers, wallboard, carpeting, compost, aggregate, insulation, solvents and rubber products.

5. Testing products

Your waste reduction team may want to test recycled content products to determine how they work on certain equipment or for particular end uses. Consider doing “blind” testing to avoid a bias for virgin material products over recycled content.

You may be surprised to learn that the quality of recycled content products has improved over the years and, in many cases, their performance is identical to, if not better than, their virgin material counterparts.

6. Phased-in approach

Companies may need to phase in the use of recycled content products so that users can adjust to the program and manufacturers can make long-term capital investments to retool equipment to accept recycled materials.

7. Price incentives

Recycled products may be more expensive than virgin products due to tax policies, price fluctuations, or economies of scale in production or end use. Companies may adopt such strategies as price preferences for recycled products, lifecycle costing or use of set-asides (where recycled products are purchased separately). Any extra funds spent should be viewed as an investment in market development, much like the other parts of establishing your recycling program.

8. Cooperative purchasing

In some communities, it makes sense for businesses to work together to buy recycled products. These cooperative purchases expand the volume of products purchased, reduce unit costs of recycled products, help ensure availability and establish common definitions and percentages. Examples of potential co-ops include state and local governments establishing regional purchasing programs, non-profits and community groups buying together and smaller businesses establishing collaborative programs. By working together, all participants in cooperative purchasing may be able to save valuable time and resources.

B-RAP FACTOID: Through recycling, the United States is saving enough energy to provide electricity for 9 million homes per year.

9. Other considerations

Companies committed to buying recycled content products should actively solicit and publicize bids from manufacturers and vendors of recycled products. As mentioned before, manufacturers and vendors provide a wide range of recycled products and it is up to the purchasing agent to request the company's preference for recycled products.

Companies also need to keep good records of what recycled products they bought, note any price fluctuations and follow-up with users to ensure the products performed satisfactorily.

The Business Recycling Assistance Program can provide assistance in helping companies develop an effective program for buying recycled products. You also can learn more about buying recycled through a variety of Web sites on the Internet. Just remember, buying recycled really closes the loop and is an integral part of making recycling work for everyone.

Key Elements of Buying Recycled Products

- Make a commitment to ask for specifications on recycled content products from vendors and purchase these products for your business.
- Consider implementing a price preference for recycled products and let employees know of this preference.
- Do your research – evaluate product performance as well price and availability when making purchasing decisions.
- Consider working with other business to purchase recycled products cooperatively – increased quantities will lower unit costs and create savings for all involved.

What is WasteWise?

WasteWise is a free, voluntary U.S. Environmental Protection Agency (U.S. EPA) program in which organizations eliminate costly solid waste, benefitting their bottom line and the environment. WasteWise is a flexible program that allows partners to design their own solid waste reduction programs tailored to their needs.

How to Be WasteWise

To be WasteWise, partners join the program for a three-year period and undertake the following activities:

- **Commit to reducing waste.**
- **Establish waste reduction goals.**
- **Track progress.**



**Preserving Resources,
Preventing Waste**

Who can join WasteWise?

Any organization can join. Large and small businesses from any industry sector are welcome to participate. Institutions, such as hospitals and universities, non-profits and other organizations, as well as state, local and tribal governments also are eligible to participate in the program.

How do you join WasteWise?

Complete the registration form, which can be filled out on-line or downloaded from the WasteWise Web site, **www.epa.gov/wastewise**. A registration form also can be obtained by calling the WasteWise toll-free number, **1-800-EPA-WISE**.

Appendix I: Materials Background

Plastics

If your organization generates a variety of plastic waste, you may need to call the supplier or manufacturer to determine what type of resin it is made of. This information is critical in recycling plastics. To assist in identifying bottles and containers, the Society of Plastics Industry developed a coding system and 30 states, including South Carolina, have passed legislation mandating this coding be incorporated on all bottles and rigid plastic containers.

Consisting of a triangular mark of chasing arrows accompanied by a numeral, the code identifies the resin for the consumer and the recycler. Presently, the code identifies six basic resin types plus a category of "other," utilizing the numbers 1-7. The resins identified are:

- #1 Polyethylene Terephthalate (PET)
- #2 High Density Polyethylene (HDPE)
- #3 Polyvinyl Chloride (V)
- #4 Low Density Polyethylene (LDPE)
- #5 Polypropylene (PP)
- #6 Polystyrene (PS)
- #7 Other

The code allows containers and bottles to be sorted by resin types. While plastics can sometimes be recycled into a commingled stream, pure resin streams normally yield a higher value for the recycler.

Paper

Paper comprises 40 percent of the municipal solid waste stream by weight. The markets for much of the paper found in the commercial sector are strong. Computer printout and white ledger are particularly good markets, offering a high return for material. Of course, as more business recycling programs are established and more material enters the secondary marketplace, the prices may drop.

Colored paper can be recycled, but there are fewer markets for this lower grade of paper and it generates less money. Mixed waste paper includes magazines, paperboard, envelopes and other material. A very limited number of markets exist for this grade.



To handle the issue of keeping materials free of contaminants, you should contact recyclers, haulers or local recycling officials who are familiar with local markets. A contaminant to one recycler may not be to another.

Cardboard

Corrugated cardboard has high value and is easy to pick out of the waste stream for recycling. Companies that typically recycle corrugated may gain some revenue and decrease disposal costs. Others allow entrepreneurs to pick up the material for free, simply to lessen the amount of waste they pay for disposal.

Aluminum

Aluminum cans comprise less than one percent of the waste stream, and more than 50 percent of all cans currently are being recycled. Aluminum has the highest value of all recyclable materials. It can be recycled into new cans and back on store shelves within six weeks of being collected from consumers. Foil and other aluminum products such as rain gutters or house siding are recyclable but must be collected separately from cans because they are made from a different alloy.

Steel

Scrap dealers have been recycling steel and other ferrous metal for decades. A new push to recycle steel beverage and food containers is taking place across the country. Commonly referred to as "tin cans," the containers are coated with an extremely thin layer of tin that is often removed and recycled separately by detinners. Bi-metal beverage containers have steel bodies and aluminum ends. The aluminum does not have to be removed to be included in the steel recycling process.

Other Scrap Metal

Iron-containing or ferrous scrap metal can readily be recycled in S.C., with several scrap metal processors located throughout the state.

Non-ferrous metals that do not include iron include copper and brass. Depending on quantities, they can be valuable and can be processed by scrap metal recyclers and some general recyclers.

Glass

Glass containers must be separated by color for recycling. When they become mixed there is virtually no market for the glass as new containers. Leaded glass, baking glass and ceramics cannot be recycled at this time.

Wood Waste

Wood waste, especially pallets, can be a large part of some businesses waste stream. Fortunately, it can be easily reused and recycled in S.C. Pallet recyclers can refurbish slightly damaged pallets. Once pallets become too worn down for reuse, the wood can be chipped for mulch or in some cases, burned as an alternative fuel source. Other wood wastes that may be recycled include crates, sawdust and odd wood shapes that may result from furniture manufacturing.

The open burning of any waste material generated at a facility is prohibited under S.C. DHEC R61-62.2. For more information, please contact DHEC's Office of the Permitting Liaison at **(803) 896-8983**.

Automotive Wastes

Businesses with automotive equipment and/or fleets may want to consider recycling used oil since it is banned from disposal in S.C. landfills. Numerous S.C. retailers as well as community collection programs collect used oil for recycling and many accept oil filters and bottles as well. Antifreeze and old gasoline also can be recycled.

When purchasing supplies for your cars, you may want to consider using re-refined oil or reusable oil filters. Some companies and government agencies are using blended fuels as a means of reducing air emissions and improving gas mileage. Check with your maintenance staff to ensure use of these alternative materials will not affect your fleet's performance or warranties.

Additional automotive wastes that can be recycled are belts, hoses, tires and lead-acid batteries. The last two are important because they also are banned from S.C. landfills.

Carpeting

Another high volume waste for some businesses is carpeting. Opportunities exist to gain value from carpet waste since much of it is readily recyclable. Nylon fiber, the most prominent type of carpet fiber, is a valuable polymer and can be used in many different applications.

Efforts are underway nationally to address the development of an infrastructure to support carpet recycling collection as well as using components to make new products from this recycled material. Carpet manufacturers have devoted considerable time and resources to develop processes for recycling post-consumer and post-industrial fiber. They also are looking at ways to lengthen the life and durability of carpet products as well as addressing issues related to indoor air quality.

For more information on carpet recovery and recycling, visit the Carpet America Recovery Effort (CARE) Web site at www.carpetrecovery.org. For S.C. companies that accept carpet for recycling, call DHEC's recycling hot line at **1-800-768-7348**.

Electronics

One of the fast growing waste streams in the United States is electronics waste, commonly referred to as E-waste. Comprised of old computers, televisions and monitors, computer peripherals, fax and copying machines, VCRs and DVDs, cellular phones and other wireless devices, E-waste contains valuable components that are reusable and/or recyclable. But only a small percentage of it is being recycled. E-waste also contains hazardous materials, such as lead, mercury and chromium that, if handled improperly, may negatively impact the environment.



In South Carolina, legislation has been introduced to set up an electronics recycling program for the state. Until this legislation is enacted, limited opportunities exist for recycling e-waste. Contact your local recycling coordinator or call DHEC's recycling hot line, **1-800-768-7348**, for a list of companies that recycle electronics waste.

Appendix II: Annual Collection Data Sheet

YEAR: _____ LOCATION TYPE: _____ UNITS: _____

Indicate measurements in tons or pounds.

GLASS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Beverage:												
Brown												
Clear												
Green												
Mixed												
Non-beverage:												
Brown												
Clear												
Green												
Mixed												
Other Glass (describe)												
SUBTOTAL FOR GLASS:												
METAL												
Aluminum (non-ferrous) - Beverage Containers Only												
Tin/Steel (ferrous) Cans												
Ferrous/ Magnetic (i.e. tin/steel - not cans)												
Non-ferrous (non-magnetic metals: i.e. aluminum - non-beverage containers, lead, copper)												
Other Metal/ Scrap Metal (do not include white goods or automobile bodies)												
Mixed Metals (do not include white goods or automobile bodies; include description)												
SUBTOTAL FOR METAL:												

YEAR: _____ LOCATION TYPE: _____ UNITS: _____

Indicate measurements in tons or pounds.

PAPER/ PAPERBOARD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cardboard												
Magazines												
Newspapers												
Office Paper/ Computer Printouts (CPO)												
Mixed Office Paper												
Telephone Directories												
Other Paper/ Paperboard												
SUBTOTAL FOR PAPER/ PAPERBOARD:												
PLASTIC												
#1 PETE - Polyethylene Terephthalate (soda & water bottle, peanut butter jars, etc.)												
#2 HDPE - High Density Polyethylene (milk jugs, soda, water & bleach bottles, etc.)												
#3 V - Vinyl (pipe, bottles, siding, etc.)												
#4 LDPE - Low Density Polyethylene (grocery & bread bags, food wrap, etc.)												
#5 PP - Polypropylene (syrup bottles, margarine tubs, straws, etc.)												
#6 PS - Polystyrene (hot beverage cups, meat trays, egg cartons)												
Other Plastics												
SUBTOTAL FOR PLASTICS												

YEAR: _____ LOCATION TYPE: _____ UNITS: _____

Indicate measurements in tons or pounds.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BANNED ITEMS												
Lead-acid Batteries:												
Automobiles (39.4 lbs.); Trucks (53.3 lbs); Motorcycles (9.5 lbs); Small, Sealed, Lead-acid Batteries												
Aircraft, boats, heavy-duty trucks, military vehicles, tractors (provide conversion factor)												
Used Oil:												
Amount Collected (1 gallon = 7.2 lbs.)												
Waste Tires: (List only the amount recycled including tires chipped for energy recovery. DO NOT include tires chipped for burial.)												
Automobile (21 lbs.), Trucks (70 lbs.)												
Motorcycles, buses, heavy farm & construction equipment (provide conversion factor)												
White Goods:												
Amount Collected (NOT long tons)												
Yard Waste & Land-clearing Debris (LCD):												
Include only the amount recycled and composted. DO NOT include amount sent to a yard trash/land-clearing debris landfill. DO NOT include sludge composting (refer to municipal sewage sludge row).												
SUBTOTAL FOR BANNED ITEMS:												
MISCELLANEOUS												
Antifreeze												
Consumer Electronics												
Fluorescent Tubes												
Food Waste (post-consumer only)												
Household Hazardous Materials												
Latex Paint												
Mattresses												
Used Oil Bottles (if not included in #2 plastics)												
Used Oil Filters (One used oil filter (crushed) weighs about 1 pound; uncrushed weighs about 1 lb. 5 oz. One 55-gallon drum holds about 750 crushed filters or about 250 uncrushed.												

Continued on the following page

YEAR: _____ LOCATION TYPE: _____ UNITS: _____

Indicate measurements in tons or pounds.

MISCELLANEOUS (continued)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Wood:												
Wood Packaging (pallets, crates, barrels if recycled into mulch, compost or similar use)												
Other Wood (furniture, cabinets, consumer electronics, & other non-packaging wood products; excludes wood from C&D and industrial)												
SUBTOTAL FOR MISCELLANEOUS:												
OTHER												
Abatement Debris (waste resulting from remediation activities)												
Agricultural Waste (generated by the rearing of animals)												
Automobile Bodies												
Combustion Ash												
Industrial Sludge (composted)												
Industrial Sludge (land applied)												
Municipal Sewage Sludge (composted)												
Municipal Sewage Sludge (land applied)												
Construction & Demolition Debris (C&D): (Include only the amount recycled. DO NOT include the amount diverted from a MSW landfill to a C&D landfill. If possible, list C&D by the category listed below.)												
Asphalt												
Brick/Block												
Concrete												
Gypsum Drywall												
Metal/Sheet												
Natural Disaster Debris												
Shingles												
Wood Scraps												
Other												
SUBTOTAL FOR OTHER:												
ITEMS NOT LISTED ABOVE												
SUBTOTAL FOR ITEMS:												
GRAND TOTAL:												

Appendix III: Other Resources

ORGANIZATIONS

DHEC's Center for Waste Minimization
(803) 896-8986

www.scdhec.net/eqc/admin/html/wastemin.html

DHEC's Office of Solid Waste Reduction and Recycling
1-800-768-7348
www.scdhec.net/recycle

DHEC's Small Business Assistance Program
1-800-819-9001
www.scdhec.net/eqc/admin/html/sbap.html

S.C. Business Recycling Assistance Program
(803) 737-0239
www.scdhec.net/brap

S.C. Department of Commerce
Recycling Market Development Advisory Council
(803) 737-0477
www.callsouthcarolina.com and select Recycling

S.C. WasteXchange
www.sc.wastexchange.org

Southeast Rural Community Assistance Project, Inc.
(803) 356-8147
www.sercap.org

University of South Carolina's School of the Environment
(803) 777-9061
www.environ.sc.edu

PUBLICATIONS AVAILABLE ON THE INTERNET

S.C. Recycles: A Directory of Recycling Programs
www.scdhec.net/recycle/html/market.html

S.C. Index of Waste Minimization Resources
www.scdhec.net/eqc/admin/html/wmrindex.html

A Listing of S.C. County
and Municipal Recycling Coordinators
www.scdhec.net/recycle/html/rccordinator.html

Additional Contacts

Notes

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